

NOTES ON TWO SOUTH AMERICAN CARABID SPECIES (COLEOPTERA) ESTABLISHED IN AUSTRALIA

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Introduction

Recently, I was surprised to find a specimen of a species belonging to the exotic carabid genus *Tetragonoderus* Dejean amongst some voucher material of Australian Coleoptera collected by Prof. Henry Howden and his wife during their recent visit from Canada. Fortunately, the species was readily determined as *T. undatus* Dejean, by comparison with authentic specimens (from Montevideo, Uruguay) in my collection that had earlier been identified by me at the British Museum in London.

Upon learning of the significance of the capture, Prof. Howden kindly supplied further details of the habitat, together with a generous series of specimens from his reserve of unmounted material. Some of these specimens are immature and thus establish the status of the species as a breeding resident in this country. It therefore seems desirable to report this interesting find without delay so that any future extension of range may be effectively monitored and in doing this, I take the opportunity to list recent information on the spread of another South American carabid, *Bembidion brullei* (G. & H.) that was first detected in Australia nearly 20 years ago.

Tetragonoderus undatus Dejean (1829)

(Fig. 1)

Head, pronotum and base of elytra dull, piceous-black; ground colour of elytra pale testaceous, the median and apical irregular fasciae light reddish, bordered with darker brown; setal insertions ringed with dark brown; legs and basal segments of antennae pale testaceous, rest of antennae reddish-brown; underside mostly shining piceous.

Head with two supra-orbital setae on each side; eyes large and prominent, not inclosed behind. Pronotum transverse, cordate, foveate on each side of midline, at about the anterior third. Elytra broadly oval, lightly but completely striate; apices lightly sinuate, not entirely covering the abdomen; third intervals with two setiferous pores; hindwings fully developed. Legs slender; hind tibial spurs long, subserrulate; male anterior and intermediate tarsi with four basal segments slightly expanded and spongiose beneath.

Length, 4.5-5.2 mm; max. width, 2.4-2.6 mm.

NEW SOUTH WALES: Gerroa, Seven-mile Beach, beside an old flooded sandpit, many specimens, 24.xii.74, H. and A. Howden.

This species was originally described from Brazil and is apparently widely distributed in that country and in adjacent areas of Uruguay and Argentina, where it frequents sandy habitats close to fresh or brackish water. Other species of the genus are known from nearby, from central America, the southern United States, Africa and the Oriental region but none has been detected hitherto in any part of the Australasian region. Our numerous species of *Sarothrocrepis* Chaudoir are to be placed in

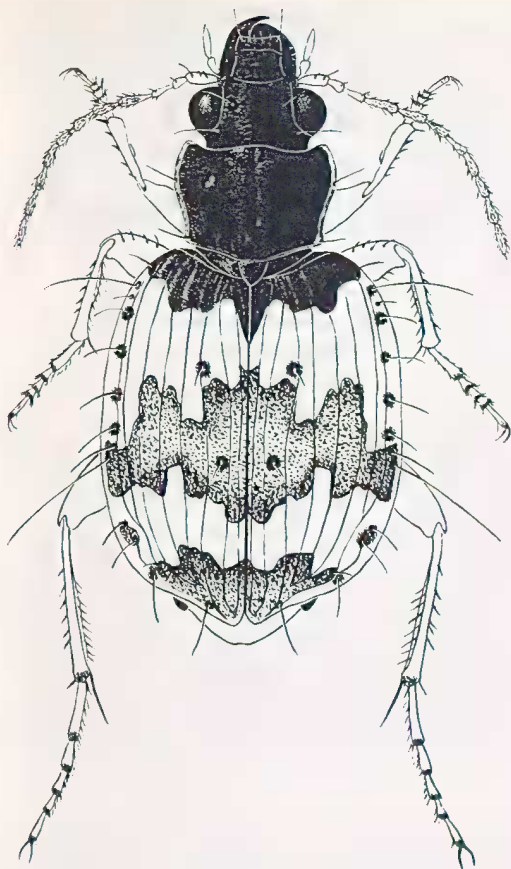


FIG. 1. *Tetrasonoderus undatus* Dejean, female from Gerroa, N.S.W. (Natural length 5.2 mm.)

the same subfamily (or tribe, according to taste) but these differ from *Tetrasonoderus* species in sculpture and markings and have entirely sub-cortical habits.

***Bembidion brullei* (Gemminger and Harold)**

This species, also a native of Uruguay and Argentina, was first detected in Australia by Darlington in 1957 and later (1962) recorded and figured by him in his revision of the Australian species of the genus. Darlington's six specimens came from beside the road between Murray Bridge and Meningie, South Australia, and were presumably taken from the margins of one of the saline lakes near the mouth of the Murray River. They were immediately recognisable from all native species of *Bembidion* by their comparatively large size (length, 5.2-6.5 mm, versus 2.9-4.7 mm for all others combined) and their dissected elytral pattern.

B. brullei was presumably unknown to Sloane and his contemporaries, as it was not included in his revision of Australian bembidiines (Sloane, 1921) and is not to be found in his collection. However, the species is now evidently quite widespread in the south-eastern states, as attested by the following recent records, all of which I have personally confirmed:

VICTORIA: Hattah Lakes, 25.viii.69 (B. P. Moore); Cohuna, 27.xi.70 (at light) (B. P. Moore); Oberon Bay, Wilson's Promontory, 19.xii.68 (G. W. Anderson). AUSTRALIAN CAPITAL TERRITORY: Black Mountain, 11.i.69 (at light) (B. P. Moore); Cotter Reserve, 16.xii.74 (B. P. Moore and S. Uéno). NEW SOUTH WALES: Brooks Creek, Federal Highway, 28.xii.69 (B. P. Moore); Lord Howe Island, Old Settlement Creek, 3.xii.66 (R. W. Taylor and E. B. Britton).

Discussion

The complete reconstruction of the history of casual immigrant species is seldom possible in Australia, owing to the size of the country and the low incidence of published records. However, the data available from the present two instances in the Carabidae provide a basis for certain plausible deductions. Thus both species appear to have been imported from essentially the same region, namely the La Plata area of South America; both are terrestrial and frequent littoral and/or riparian habitats; and both show fully developed hindwings and are capable of flight. Species with such habitats would be particularly prone to transportation in ships, along with natural ballast, to be later dumped in some numbers, at times in habitats not unlike those from whence they came. Presumably *T. undatus* and *B. brullei* reached Australia in this way and, having gained a footing, are now in process of exploiting an unsaturated ecological niche.

It seems not unlikely that Darlington's discovery of *B. brullei* may have been relatively close, in both timing and location, to the original intrusion of the species, which probably remained essentially *in situ* for a number of years until diversification of its gene-pool allowed it to spread. Apparently this eurytopic species, which is capable of living in sand, mud or gravel, then moved eastwards along the entire Murray-Murrumbidgee river system and also along the coast. That some such spread in fact occurred quite recently is attested by my own observations in the Canberra district, where the species is now common in riparian habitats that failed to produce a single specimen, 10 years ago. On the other hand, the status of the population on Lord Howe Island is unclear, although the occurrence of the species there in large numbers as early as 1966 tends to suggest a separate maritime introduction.

T. undatus is a more fastidious species that is apparently restricted to clean, wet sand and it may not be capable of such an impressive extension of range. Moreover, its current distribution in south-eastern Australia is not known. All that can be confidently stated about this interesting immigrant is that it is certainly established on the Seven-mile Beach.

Acknowledgements

I wish to thank Henry and Anne Howden for the opportunity to examine their interesting material and for the gift of specimens of *T. andatus*; and Mr. Gary Anderson for records of *B. brullei*.

References

- Darlington, P. J., 1962. Australian carabid beetles X. *Bembidion. Breviora Mus. comp. Zool.* no. 162, 12 pp.
 Sloane, T. G., 1921. Revisional studies on Australian Carabidae. Part VI. Tribe Bembidiini. *Proc. Linn. Soc. N.S.W.* 46: 192-208.

BOOK REVIEW

The insects of Australia, Supplement 1974. Sponsored by the Division of Entomology, C.S.I.R.O., Canberra. Melbourne University Press, Carlton, Victoria. 4to. viii + 146 pp., frontispiece, 42 text-figs. Price \$8.00.

The Supplement is subdivided into the same chapters that formed the original volume, and they are retained in the same order. This is very convenient in use. Some new material has been added to each of the chapters apart from the two dealing with orders not yet found in Australia, namely the Zoraptera and Grylloblattodea (Chap. 17, 18).

In the general portion of the book the most notable additional material is in Chapter 2, "General Anatomy and Physiology", where two quite extensive and very useful sections have been added — i.e., Insect Vision, by G. A. Horridge, and Insect Behaviour, by R. M. M. Traynier. Considerable additions have also been made to the chapters "Cytogenetics", "General Biology" and "Principles of Classification and Nomenclature". In the last named of these, particular emphasis is placed on recent developments in numerical taxonomy.

Of the chapters dealing with particular orders, there is extensive new material in the Diptera (Chap. 34), Lepidoptera (Chap. 36) and especially the Coleoptera (Chap. 30). A very welcome addition is the provision of a key by E. B. Britton, to the families of Coleoptera based on larvae, with a number of figures. These figures, and indeed all 42 throughout the Supplement, are of the same excellence that marked those in the original volume. (There are no plates in the Supplement.) However, Fig. 8, p. 19, concerning exuvial and cuticular phases of the insect life cycle is unfortunately somewhat detached from the text and is not entirely clear without reference to the original publication from which it is taken.

There is a good list of references (18 pp.) bringing this section up to date. At first sight the "Corrigenda" to the Main Volume appears rather long (4 pp) but many of the entries deal with changes in the names of taxa since the book went to press, rather than "errors" in the normal sense.

The Supplement is thus a very valuable addition to the Main Volume and it highlights the changes in knowledge that have occurred in the four years since the original publication. In the next Supplement, or a revised Main Volume if that is to be produced, I would like to see a "Glossary of Terms" included, as students tend to find confusing the rather wide range of terminology used by the specialist authors of the individual chapters.

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